

# **CHARGING ONCE MORE INTO THE CROSSFIRE**

An Informal, but Technically Accurate  
Paper on Documents Related to  
Lt. George W. Bush While Serving in  
Texas Air National Guard

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**Disclaimer:**

Until a colleague informed me, I had no knowledge that the movie *Truth* had been made and was due soon for release and which is based on Mary Mapes's book *Truth and Duty*. I was neither notified nor consulted by those making and releasing the movie, which I will see only after this paper is released to the public. If the Motley Fool's discussion of it is to be credited and one's inferences permitted free (and most likely errant) reign, the movie-makers also believed what the Motley Fool asserted several times, that the documents related to the military service of the second President Bush were all forgeries. If so be their belief, all three groups are equally bamboozled as it seems many Americans are, as well as a number of American document examiners. I say all this only to assure you that this paper is a personal labor of choice and was not commissioned. I write it for the rare individual who still considers verified, factual reality to be a good foundation for an opinion about controversial matters. Please read on only if you do not mind facing clearly demonstrated factual realities and a careful distinction between physical reality and political preference. One may blithely continue through life passionately cherishing the latter of any persuasion and still recognize and admit to plain facts, however contrary to one's beliefs those plain facts might plainly be. If you harbor a poor estimate of me, please do not contaminate my space with it, especially if expressed in a foul-mouthed way. If you hold to the current myth that everyone's opinion matters to all the rest of us, be assured that I could care less and leave you the privilege not to care much for either my opinion or the physical reality that is not born of my opinion regarding the Killian documents but gave birth to it.

I had hoped to complete this paper before the movie's U.S. release. Life's demands interfered with that hope, so now it is completed at what I assume is the best time under the governance of Providence. As to my appearance on the original broadcast, several good friends expressed how anxious and perturbed I must have been with the nasty personal attacks aimed at me and the false rumors circulated about me. The attackers are pitied as being like those chopping off a tree limb on which they sit on the outer end, but with these differences. They know the limb is being chopped off with them sitting on the end, but which they think is the solid, safe, tree trunk beginning, and they think someone but themselves is doing the chopping. If such people give you their approval without abandoning their nasty disposition and underhanded ways, worry about possibly having lost your moral integrity and personal honor.

**Introduction:**

On Labor Day, 2004, Dan Rather interviewed me for that week's *60 Minutes Wednesday* broadcast regarding documents related to the younger President Bush's service in the Texas Air National Guard. I shall refer to him by his military rank at the time of his military service, Lt. Bush, out of respect for the rank he achieved and for the military service itself. Overnight the *60 Minutes* folk were viciously attacked by bloggers who seemed to think that anyone disagreeing with them in the least was an enemy, and each enemy apparently perceived as an opponent to be destroyed. The underlying irrationality, illogical assumptions and false assertions upon which the bloggers' attacks were based perplexed me. For the vilified it seemed like being the main course for a feeding frenzy by sharks that have only the smell and taste of blood to unite them.

In this paper, I hope to redirect this focus to observable physical realities. I respectfully submit that in any debate one can be courteous and civil, as well as willingly admitting of contrary physical facts, and simply tell the truth about the basis of an irrational belief: "I believe

in my political philosophy because I choose to believe in it. I concede that any number of demonstrable and undeniable physical facts are contrary to my belief, but I am tolerant and will endure their impertinent existence. I believe because I believe and prefer to believe. I suspect you have similar beliefs, but I do not wish to argue the matter. Will you now do me the favor to let me buy you a drink?" Therefore, in this paper I will limit myself to demonstrable physical facts that are, as Albert S. Osborn was wont to say, as plain as the nose on your face.

### **Preliminaries:**

There are a few fundamental remarks that can serve as guidelines in our pursuit of physical facts. These guidelines give us instruction on how to distinguish a physical fact from an emotional stance, how to know when a fact we do not like seems supportive or destructive of a belief we cherish. This instruction comes right to the central mistake in all the heated arguments resulting from the realities of a few pieces of paper. This central mistake was conflating one's political preferences with past events that the preferences were never based on. I think the multifarious contentions and claims that followed were only argumentative tantrums arising from the central mistake.

Whether you voted for Lt. Bush as president or not has no relationship to whether or not he properly performed his service in the Texas Air National Guard. You could very well say he was a complete flop as a pilot and still think he was the finest president we had since George Washington. On the other hand, you can say that you hold as a firm dogma that he was the finest fighter pilot in service to our country since the first American fighter pilot flew the first American fighter aircraft, but still think he had no commendable quality or accomplishment as president. I will give an example from my own experience.

There was previously to the Bush Air National Guard episode the question of papers allegedly handwritten by President Kennedy which showed connections to criminal elements and an affair with Marilyn Monroe. I issued two affidavits filed with the New York state trial court with jurisdiction in the civil matter, *Cusack vs. CBS*. I fully supported the authenticity of the documents and excoriated the testimony of two expert witnesses for the government in the federal criminal case. We need not delve into the tedia of the two cases, since all I wish to say is that I supported the authenticity of the documents though I had voted for JFK for president and would have voted for his reelection. What change in my political stance did this cause? None. If today he were running for president against all presidents and candidates for the presidency after Harry Truman, I would vote for JFK. I believe his performance as president was superb, while his performance as a husband left more than a little to be desired. So you can safely concede the demonstrable, physical facts I discuss and still hold tightly to whatever political preference you wish. Nor is there any need to respond in a vulgar, insulting, uncivil and discourteous manner. You could, however offer a cultured insult, since insults do not have to be base, nasty and so ill-naturedly lacking in a cultured, accomplished, literate and classy expression.

### **The Documents:**

It is often conducive to final clarity in resolving a difficulty to pare down the materials to be investigated and the perplexities to be resolved. So in this enquiry, out of nearly a ream of documents sent to me that I examined, we will look at two of them that on their face came from the office of Colonel Killian, Lt. Bush's immediate superior. We will also look at several sets of

fonts. Much of this material will be in enlarged reproduction for ease of observation. Finally, my affidavit regarding the Killian documents, that was filed in Federal Immigration court here in San Francisco, is included as an Appendix. Since all documents represented as coming from Colonel Killian's office and issued by him personally were in the same font, only two of them are used as representative of the rest. We could use any one or two of them and arrive at the same result. Let us consider the documents included herein in the order they are attached hereto and designated as exhibits by sequential letters.

**EXHIBIT A** is a memo dated 02 February 1972, to Harris from Killian. Enlarged words from it comprise an exhibit in the affidavit in the Appendix because it was of finer quality than other copies of the documents. As the affidavit mentions, Mary Mapes's circle of journalists had discovered a source of better quality copies of some documents, from one of which **Exhibit A** is derived. No representation is made as to what the illegible handwriting in the lower center of the page is or represents.

**EXHIBIT B** shows enlargement of most of the typed characters from **Exhibit A**.

**EXHIBIT C** is a memorandum for record with Jerry B. Killian's name. **Exhibit D** is derived from it as will be explained next. **Exhibits C** and **D** will provide much good data for our enquiry.

**EXHIBIT D**, of two pages, shows on page one an enlargement of a portion of **Exhibit C**. On page 2 the same enlarged portion is copied with a grid superimposed on it. More on all this later.

**EXHIBIT E** is a copy of Times New Roman font. This and the fonts illustrated in **Exhibits F** through **I** will demonstrate that the font in the Killian documents is not of any of these five fonts. Why these five are used will be explained.

**EXHIBIT J** is a document dated 26 Aug 69 and names Major General Ross Ayers, Adjutant General of TexARHG, as the author. It is included since it is in a proportional font. No one, who asserted that the proportional font in the Killian documents proved them to be forgeries, seemed to have noticed that this and other documents of the same general vintage as those in Lt. Bush's military file were in a proportional font but were from other sources than Colonel Killian. Along with the cite from Ordway Hilton in the Appendix, this defeats one argument against the Killian documents, because typewriters with proportional fonts were quite common in American offices before 1970.

**EXHIBIT K** shows almost the entire alphabet from the font used in **Exhibits A** and **C** and other Killian documents in the material supplied to me by *60 Minutes Wednesday*. This makes it easier to compare the font to the five model fonts. The adventure of trying to identify this font, which will be shown not to be any of the five model fonts, will be given later.

#### **About the Fonts:**

First, I must disillusion some readers about the extent of my ignorance and incompetence. Some critics, seemingly including document examiners given to anonymous gossip and cowardly

anonymity, declared that I only knew handwriting and nothing much else about document examination, especially fonts. I will offer two of the several possible facts in reply. First, California Court of Appeals, Sixth District, in 2001 Cal. App. Unpub. LEXIS 1186, *Santana, v. Women's Workout and Weight Loss Centers, Inc.*, adopted my opinion, filed in the form of a declaration under penalty of perjury, regarding an issue of font identification and general typography of the key document in the case. I will be posting their decision on my web site before the end of the year. Second, if one *only knew handwriting*, one would know what comprises 80% to 90% of the work load of the document examiner. That is a big *only*! However, I invite the reader to enter “Marcel Matley” into the search window of Internet Archive, <https://archive.org>, and review the more than 30 of my forensic publications. As time permits, others will be posted. It is respectfully submitted that an unbiased reading of these will intimate both the scope of my knowledge and the growth of it through the years.

Here are practical pointers applicable to what we will review together. If you can figure out how to do your annual federal income taxes, you can figure out how to work on identifying questioned fonts. It is not requiring of the technical expertise and exoteric knowledge proverbially attributed to rocket science. *Haas Atlas*, which will be discussed briefly in the section, **A Bibliographic Stroll**, is your primary tool if you can afford it or can borrow it from a colleague. Its reputation is that it comes as close as humanly possible to including all typewriter fonts ever employed by any manufacturer of typewriters anywhere in the world. You need the document in question, of course, and to examine it as well as possible you need to enlarge the typing. For that you just use your scanner and computer with your handy printer. Compare your enlarged images of the questioned font to fonts out of *Haas*. *Haas* has a program whereby you can enter traits of the unknown font in answer to a series of questions, and theoretically the software submits a list of likely model fonts. When you get a match, you get a thrill like a kid finding the prize egg on Easter. What could be easier? Or more tedious?

Unfortunately, dismiss the thrill! Those who earnestly sought an identification of the font in the Killian documents apparently got overly excited and persuaded of their own amazing perspicacity and forgot the more important task of *verification* of the tentative identification. How do we verify whether we have the correct identification? The simplest way, and the one we will run, is to check the letters we did not use in our investigation, both upper and lower case. Do they all fit with our tentatively chosen model font? For example, one document examiner of great repute used capitals “M” and “G” and the forward slash to “prove” the font of the Killian documents was Times New Roman. The forward slash has a technical name, virgule. Being a country boy I prefer to say forward slash. Ignoring the fact that the deterioration of the images due to photocopying forbids the precise measurements that this expert and others tried to employ, let us assume it was a technically correct exercise, which it was not. How do we check the accuracy of the final identification of Times New Roman? Quite simply.

Fonts for English provide 26 lower case letters, 26 upper case letters, and ten numerals (some fonts provide only eight special numerals), making 62 characters plus punctuation. So let us just check letters, upper and lower case. We come up with **Exhibit K**. Note the many letters with design differences from our two exhibits of Killian documents as compared to the five model fonts in **Exhibits E** through **I**. I would insult your honest ability to observe if I were to detail more than select examples of the multiple design differences, since it takes little practice to get the knack of it. Here are a handful of design differences between Times New Roman and

what I will call “the Killian font” for sake of convenience:

1. Lower case “y” has two serifs in the Killian font but three in Times New Roman;
2. Many letters in Killian font have what I call dimples, but none do in Times New Roman;
3. The final lower serif of capital “S” in the Killian font goes beyond the leftward extent of the upper curve while in Times New Roman it is aligned with it;
4. The difference between thick and thin stroke is more pronounced in Times New Roman than in the Killian font; and
5. In Times New Roman the bowl of lower case “b” is proportionally smaller compared to the height of the letter than in the Killian font.

It takes only one verified design difference in one letter to determine that one has a different font. But why use these five fonts?

Times New Roman was the font of choice for those claiming to prove the Killian documents to be forgeries. When some did realize this was untenable, Times Roman was offered as the font, which **Exhibit K**, when compared to the Times Roman font in **Exhibit F**, clearly shows to be untenable for mostly the same design differences. Now we come to Palatino which was offered as an alternative to Times New Roman and Times Roman. It is as good an alternative since it is equally untenable, mostly for similar design differences. In my researches I came across an article on the Internet in which it was revealed that the IBM Executive typewriter was chosen for the Thai language since those choosing it thought that the font Heritage was compatible with the needs of Thai. Heritage pretty much has the same indentations of capital letters as does the font of the Killian documents, such as at the point where the bar crosses the stem of capital “T.” Very quickly after that initial excitement that I might have found the font, I simply checked individual letters and noticed some design differences easily seen in **Exhibit K** as compared to **Exhibit H**. Patron font has the little indentations, which I call dimples though I am sure there is a technical term. It also has design differences, but might the dimples be like a mitochondrial DNA characterizing IBM fonts for Executive? Good question, but, if we guess about it minus physical evidence supporting our guess, we make the same mistake the critics of the Killian documents made, and we are doubly inexcusable since we know better than let either imagination or the excitement of possible discovery or old fashioned bias lead us astray.

Let us review the lessons we can learn from the fundamental mistakes the critics made:

1. We do not let a desire for a particular outcome influence us. If we cannot divorce our enquiry from such a desire, we should resign from the assignment.
2. We use the best sources of data available to us and seek as much more as we can.
3. We consider every initial conclusion as to identity as a tentative opinion at best.
4. We run a verification of the initial identification by seeing whether other characters in the questioned font support our initial identification when compared to the model font.
5. We keep our opinion to ourselves unless and until it is verified.
6. If we have made a mistake, we own up to it and correct it.

### **Killian Documents Not from a Computer:**

The beauty of believing the Killian documents are in Times Roman, Times New Roman or Palatino font is that one can then believe they are the product of a computer. We test this contention by seeing whether or not the Killian documents have any characteristics that are not

compatible with computer production. They have three. Remember that a computer and its associated hardware, primarily for now the scanner and printer, are ruled by a software that makes them do things with minute, mathematical accuracy. Looking at **Exhibit D** we find two facts demonstrating the text could not have been generated by a computer and a third supportive of this conclusion:

1. Some letters are inaccurately aligned along the baseline, a thing a typewriter could produce but not a computer.

2. Some letters are at a slant to the left or to the right rather than upright. Again, this is something a typewriter could produce but not a computer.

3. Lastly, those debating these documents spent much attention and expended much time and research on kerning. There is no kerning, although some highly skilled persons could find what is not there, and this absence of kerning is supportive, but not itself dispositive, of the conclusion that the Killian documents were not computer generated..

Let us consider each of these more specifically, all observations referring at first to **Exhibit D**, page 2.

1. We carefully align a grid with the baseline of our enlargement of page one of **Exhibit D**, and by copying that we thus obtain page 2. On the last line of page 2 note in the first word the third “e” floats off the grid line as do the following “d” and the “b” of “but.” You can find others with careful observation. If you use your own transparent grid or straight edge, for accuracy be sure to align the grid line or straight edge with the two lowest points of the mid zone characters of the line of type you are checking.

2. Still on **Exhibit D**, page 2, the easiest instance of divergent slant is in numbered item 3. The third line begins with “Officer.” Note how the two letters “f” lean rightward. Right above is the word “forwarded” of which the letter “f” is upright. I will let you enjoy finding others. For each you find, compliment yourself in being more skilled than several experts who did not even know to check for this trait, much less discover it. Hence we are highly cautious when the grid lines leave the baseline due to absence of a properly placed guide line.

3. For the absence of kerning, we look now at **Exhibit D**, page 1. The word “conveyed” in the top line invites kerning in “ve,” “ey” and “ye,” but the kerning is not present. Compare my typing of the word “conveyed” in the previous sentence with the same word in **Exhibit D**. In the same line “verbal” has no kerning in “ve.” Now that you have the hang of how to find this absence of kerning, I will respect your skill as equal to mine and superior to that of the experts that never even thought to do the objective observations of a critical issue in the identification of typewriting, and to those that did but misobserved and so misreported the presence of kerning.

Our conclusion is more forced upon us than discovered by us: The Killian documents were produced on a typewriter. The IBM Executive has not been proven to be the typewriter though we have shown it cannot be eliminated. We have not identified the font, but we have eliminated the fonts that were fundamental to the opinion of those who believed the documents to be forgeries. We went further than that. We eliminated two fonts that could have been claimed to be the fonts used, though, if we had neglected the obligation to verify our findings, we could have pretended we iced the case and found the font. The critics could not have in logical consistency taken us to task for using their inadequate theory and inept method. However, our consciences would eternally burden us if we practice such deception. I do not accuse them of deception, since I credit their wayward work product to unrecognized bias, or ineptitude of

method, or faulted theory, or lack of logical mental processes. We have not proven authenticity, but we have eliminated the contentions most central to the false opinion that the documents have been proven to be forgeries. We can with peace of mind recognize that more needs to be resolved because it required, off and on, much more effort, time and resources than life allowed us over a number of years to ferret out the data we needed to come this far. After all, you and I and other conscientious souls have obligations to family, work, community and country that come first.

My last remark on issues of the typewriter is that **Exhibit K** is as complete a collection of characters from our mystery typewriter font as I can compose. My hope is that good-hearted souls will endeavor to identify it. Maybe one of those who did clerical work in the 1960s and 1970s will recognize it as an old friend. Next are some explanatory remarks on **Exhibit K**.

Rather than scan and copy individual lower case letters, I cut corners and gave some strings of text from **Exhibit A**. All capital letters and numerals were taken from **Exhibit A** except the following came from **Exhibit C**: D, G, M, O, P, V, W, 3, 4, 5, 6 and 8. Note the markedly lower quality of characters from **Exhibit C** compared to characters from **Exhibit A**. Capital “D” is repeated to remind us how copying and/or faxing may distort the details of a font’s design, so that an identification can range from suspicious to highly probable (clear and convincing, in attorney terminology). However, as with handwriting identification, we can be definite as to an elimination, as was demonstrated with the five model fonts we considered. Capital “W” with its punctuation is used to remind us about the absence of kerning as compared to these letters, “W”: “W.” or “W,”. If this were a report for evidential purposes in a legal proceeding, each character or selection of text in **Exhibit K** would be identified as to the word, line and page of which document it was taken.

### **My Mistake:**

Yes, singular “mistake.” In the CBS studios in New York, on Labor Day, 2004, I wrote up a series of questions for Rather to ask in the interview. I showed them to Mary Mapes who said they had it covered, and she may not have read my list. Before being on camera, Rather and I stood together chatting. It was then I made my mistake. I should have brought my questions with me and showed them to him. After all I was the only forensic expert there with trial and deposition experience as a forensic expert. I ought to have said: “Ask me these questions in this order or I walk out and go straight home.” Instead of the off topic chat we had, we should have had a serious pow-wow on exactly the protocol we would follow. The positive result of this mistake of mine was that I later developed an admiration and respect for the man’s, and for Mary’s, quality as a human being, of humanistic traits and with dedication to courageously prospecting for the truth. But they had no experience with the dynamics of forensic investigation and its special form of reporting. Accustomed to producing and preferring crisp, curt, sound bytes of question and reply, they might not have grasped how very little in life fits such a mold. Serious, in depth, thorough going intelligent thinking about a thing is inimical to commercial TV’s *raison d’etre* which is to make money by expending every available second on selling something.

Permit me to fabricate a conversation that never happened and never will. It is a more entertaining way to present what might have been but for my mistake. We will have two characters, Reporter, designated by R, and Expert, designated by E.



R. To start with, are there any difficulties working with the copies we have?

E. Yes, the copies are several generations from the originals.

R. Give me an example of the problems that caused.

E. The first thing I did when I got the documents was look at them with a magnifying glass to see if I could identify the font. What we call toner loss and toner gain so distorted, for example, the lower case letter “t,” that no one could determine the precise original font design.

R. So no expert would even try?

E. Oh, there is always an expert who specializes in providing the impossible.

R. Was the typewriting of no use at all then?

E. It could verify whether or not a claimed model font was wrong by simply checking if our copies showed a feature contrary to the claimed model font.

R. So, what did you do to help out with possibilities?

E. We could see what the preponderance of available and reliable handwriting evidence from the signatures might provide.

R. Any results there?

E. Yes. Two signatures have features divergent from the others. Those two talk about pressure to say a pilot performed all requirements when he had not. Extreme pressure as described in those two documents can cause features in handwriting that have been determined by research and taught by major authors for almost a century now, the main one being Albert S. Osborn.

R. Since we need solid foundation for anything we claim, tell me a bit about these authorities.

E. Albert S. Osborn in his major book explains the traits in the forger’s writing from anxiety, when stress takes hold of him. Then they disappear as he thinks he succeeded. Modern scientific research has shown traits of tension occur in handwriting during a stressful situation as compared to writing during times free of stress. Various researchers came up with the same list of traits for writing under stress, and that is the difference between the two signatures on documents talking about being pressured to act against the truth about the man’s performance and the other signatures.

R. We showed you more documents after you arrived. Do they change your opinion?

E. They do in so far as they permit more confidence, since they fit nicely into my opinion formed before I either got here or saw those documents that were new to me.

R. Suppose the person in question or the family or business associates or friends say you cannot tie this down definitely and so you are wrong. Is there a reasonable reply?

E. Certainly, it would be the reply if this were in litigation. They are right, I can take it no further, since I got all pertinent data the present documents will permit. But like you, I want more, knowing more could prove me wrong. Who controls that more? The people you named. If they do not bring it forth for examination while claiming it would support their position, the reasonable presumption is they withhold it because they know it would go against them. They are obliged to come clean on all documentary evidence. Additionally, if they destroyed any documents or had someone do so for them, that is conclusive evidence in my view that they knew the evidence was against them. And that is all I can give you at the moment.

R. Thank you.

If I had done my full duty to the client, the results of it all would have been a bit different. But not politically, since the populace will vote as the populace wishes to. No

intelligent person would confuse ability to fulfill flight requirements with determination to adhere to administrative obligations and pursue political objectives. I would not have voted for the man because I disagreed with his priorities for the country. As a man, I grew to pity him as he took on visible features of inner pain and physical deterioration from the stress of office.

### **Miscellany:**

This will be odds and ends which maybe some folk take terribly seriously as central to their perception of the reality of this *comedia humana* which lacked all comedic qualities. Let us begin with the infamous superscript “th.” One expert mentioned Olympia as providing it. Checking *Haas Atlas* I could not find the character in fonts used by Olympia, though with the difficulty of using the *Atlas* and the wealth of little characters to check, one could miss it. Nor did I notice the character in any other brand’s model fonts. Again, that may only mean I did not notice it. One could always have ordered a special character when purchasing a typewriter new or have the machine modified after purchase and some usage. To deny this would be like asserting one may not have a custom item installed on an automobile for which it is not standard. Likewise, a typist who is unskilled or unfamiliar with a particular machine with a superscript “th,” someone like myself, might use the special character at one time then not at another, such as I did long ago when using a machine so modified. All this only shows how we humans can create futile arguments but take them seriously.

I trust the reader will indulge my penchant for exploring the etymology of words, because in this case it offers us a salutary lesson in making and trusting assumptions or partially performed enquiries. In pursuing “comedia” in a Latin dictionary one might take the verb “comedere” as the root of the word “comedia.” “Comedere” means to eat up, and by extension to squander (eat up one’s money), devour (“gobble up” other’s property or self), grieve (eat up oneself with emotional pain). Much of so-called comedy on TV is such devouring of the dignity, peace or good name of others. The word “comedy” in English, “comedia” as in “comedia humana,” is from the Latin “comoedia,” where “oe” is pronounced as “e.” It is from the Greek word best translated into English as “comedy.” The lesson for us in forensic investigations is not be so assured that our first discovery is the correct discovery, that our first opinion is the best, or even a correct, opinion. We must double-check our observations, *aliis verbis*, our data, and run a reliability test on our entire hypothesis, both on each part of it and on the whole as a whole.

Mary Mapes recounts an incident where people from *60 Minutes* showed the documents to a spokesperson at the Younger Bush’s White House. This person’s assessment was that the documents supported “our” contentions. I would have begun and ended every broadcast with that incident, repeating it once or twice along the way, since it obliquely authenticated the documents.

Ockham’s Razor is a logical rule that says one should not, in offering a hypothesis to explain a set of data, propose more unobserved things, persons and actions than the minimum needed. The thesis that the Killian documents are genuine relies on the least number of explanatory things, events and people for their production: Killian himself. The theories of forgery seem to add layer upon layer of actors, actions and things to explain how this could be so. It got so complicated that one explanation seemed to say that genuine documents were forged so that the forgeries said exactly what the genuine ones said. Another proposed that long before anyone thought of looking for them, a clever and apparently clairvoyant person created the false

documents attributed to Killian. In this or another theory the forms regularly to be found in a military file were forged. Then, to embarrass Senator Kerry, the Democratic nominee for president, the forger or forgers cleverly arranged to have CBS reporters discover the documents, cleverly hidden apparently so that only CBS reporters would on some unknown day, for some unknown reason of their own, find them. There are other layers of hypothetical things, persons and events cleverly explaining the clever maneuvers of the forgers and the gullibility of the investigative reporters, although investigative reporters are known to be maybe the most skeptical segment of our professional population. At this point I suspect Ockham was rolling over in his grave. There are even more hypothetical actors, actions and materials proposed by others. None of it has the least nexus to any demonstrable reality. No wonder those living in the fantasy land of forgery developed such anger and hatred towards the iconoclasts who still reference physical reality so relentlessly. It is an existential threat of losing one's only supposed reality, the unreality of the theory of forgery that has but repetitive insistence to uphold it and to gain new adherents.

The Independent Panel, that CBS management set up to investigate the alleged debacle of *60 Minutes Wednesday's* seeking the truth about the documents, said these documents had not been properly vetted. I did not notice any vetting by the panel in its report, whereas the investigative reporters exhausted every avenue of vetting available to them. I will offer one instance of the questionable method of the Panel and another instance of its questionable passion for truth and duty. I asked whether or not a record would be made of our conversation. They said no, explaining that talking on the record might intimidate witnesses. These witnesses were mostly forensic experts and reporters who lived by talking on the record and mostly relished doing so. After the report came out, I sent a list of materially false statements about me and my testimony and asked correction. They refused to correct any of their errors. I talked to several other witnesses, some who supported the genuineness of the documents and some who supported their falsity. Each one I asked mentioned being misquoted by the Panel's report. I guess if one's predetermined position requires non-factual facts, it is best not to have a record of the investigation and interviews. It later came out that Viacom, then owner of CBS, had decided a Republican president would be more profitable for it.

The term "toner gain" refers to the buildup of toner by photocopying, especially repeated copying, giving in the illusion that the image copied is thicker or darker or has more connections than the original. See "KILLIAN" in **Exhibit B**. Along the baseline toner gain gives the illusion that "KIL" and "IA" are joined. The isolated "L" and "I" show that the serifs do not extend far enough to allow for such joining in the original. "Toner loss" is the opposite phenomenon. It makes the letter "u" of "ebruary" and letter "g" of "flight" appear to be fragmented letters. **Exhibit D**, page 1, shows far more instances of toner gain and toner loss. It also shows the ill-advised efforts of those who claimed to have identified the font. This one is it. Well, at least one of two possibilities. Well, at least one of three possibilities. As we saw it was none of three impossibilities to which we added two less impossible possibilities, but still impossible.

Had I time and financial resources, there might have been avenues of viable pursuit of the ultimate truth of the matter. I only give examples that I suspect might be fruitful. A freedom of information request for records of acquisition of typewriters in Texas Air National Guard might disclose the exact brands of typewriter used in the various offices with their fonts. Redacted samples of Killian's memos in other personnel files might show exactly the fonts and style of

writing used by him in undisputed documents. Records of disposal of typewriters when replaced by newer equipment might provide data that records of acquisition could.

### **A Bibliographic Stroll:**

Surely the reader has noticed that I truly meant to give an informal, yet meticulously accurate, discussion rather than a formal, proper technical report. A conversational style is used in hopes that enough souls will welcome a courteous, low key conversation about these technical matters. To continue in the same informal manner, I offer this relaxed presentation of some bibliographic sources. Fair warning: Our stroll will have no particular order nor effort to be complete, either in coverage to the reader's satisfaction—nor to my own satisfaction for that matter.

*Haas Typewriter Atlas* is available to non-members of American Society of Questioned Document Examiners [ASQDE] at the tune of \$775 for individuals and \$875 for agencies. Since ASQDE has a monopoly on it, I would say the price is near to, if not past, commercial gauging. If you need it desperately, you need it desperately, and desperation leaves scant space for debating the issue. It is a single DVD.

Mary Mapes's book, *Truth and Duty*, is a delightful read however much one might prefer to disagree with her. I recall the Democratic National Convention when Texas Governor Ann Richards spoke about the Republican candidate, who in the coming November would be elected as the elder President Bush. She had such lines as: "Poor George! He was born with a silver foot in his mouth." Senator Barry Goldwater of Arizona, who was as staunch a Republican as one would ever hope to meet, said in an interview that he could have listened to Richards all day. He had a strong conservative streak, which is an understatement, but he did not drown either his civility or sense of humor in a swamp of persuasions. So, those, who decline to read Mapes's book because of their political persuasions, rob themselves of some of the delights of their universe and damn themselves to possessing an acidic soul and rancorous existence maybe unto eternity. Besides, one might just learn to have admiration and empathy for a fellow human being who may be found to have a kindred and admirable core of devotion and service to an ideal.

Albert S. Osborn's major book is *Questioned Documents, Second Edition*. The first edition is available on Internet Archive. Osborn wrote that, if one had his first edition, one need not spend money on the second. Those of us who have seen both dare to disagree with him. I am sure the publisher was less than deliriously delighted with his rather reserved recommendation of the second edition.

On Internet Archive you will find for free my *QDE Index*, 2008 edition. I lack the energy and youthful enthusiasm to update it. American Board of Forensic Document Examiners [ABFDE] issued a bibliography which they restricted to themselves and their students. Nevertheless, when an examiner retired, he sent me both the digital and paper copies he had obtained legitimately. If they had asked me privately, I would have explained how to make correct citations and build a properly organized and retrievable database, and they need never have confessed to such prudence on their part. However, secretiveness of the clique in what is supposed to be a scientific contribution takes one out of the aegis of science. An essential element of scientific activity is openness to all with legitimate interest in the science, particularly one's fellows in the same discipline, whether one approves of their existence or not. One really robs oneself otherwise, since the questions of the Pariahs will spark adventurers into new realms of scientific enquiry, and their special contributions will enrich the entirety of the field. ABFDE

has the same policy for a marvelous compilation of materials related to *Daubert* challenges and handwriting expertise. One could at least be intelligently commercial and let those one does not like pay for costs of publication.

Whereas the ASQDE will sell *Haas Atlas* to non-members at an exorbitant price, they staunchly protect their meetings from intelligent and financial input by unapproved non-members. I was in a case wherein the opposing expert was from Homeland Security forensic lab. He had presented to an ASQDE meeting. I urged the attorney who retained me to ask for a copy of the presentation which purportedly helped prove the man was qualified as an expert. As I knew would happen, the response was that one would have to petition ASQDE for permission and they would decide whether to deign to provide the paper. The item was by happy chance gifted to me while the case was pending. I told the attorney that, if I had presented the paper, I also would want it to be kept secret. To their credit and my gratitude they post their annual programs on their web site so you can check whether a claim to have presented to them is honest. They publish a most admirable journal which I recommend to all document examiners.

In Internet Archive you can download my monograph *In the Exercise of Ignorance....* At page 59 begins "Appendix B: Affidavits in Cusack Case." It is an example of how expert testimony should be closely and critically evaluated without any *ad hominem* element intruding, only with verifiable physical facts, good logic, and reference to recognized authorities when appropriate. When I told Mary Mapes I had contributed my expertise to Cusack's suit against CBS, she said, "That just shows your objectivity." It was little spontaneous words and actions like that that made it easy to like her as a human being. Another was her courtesy to her coworkers who were greeted by name however often we passed them while she was taking me to different rooms. An illustrative example of many had to do with Eddie, the janitor, who constantly policed the studio to keep every stray bit of debris picked up. We passed Eddie several times, and each time Mary lit up with a smile and said, "Hi, Eddie!" Eddie responded with like courtesy and respect.

In the list of my library holdings I have this entry:  
"Hailey, David E. Toward identifying the font family in the Bush memos. Final report. No publication data. Downloaded from Internet. (30 p.)"

I have two other digital publications by him. During an attempt to access where one can download his publications related to the Killian/Bush documents, enough sites were noted as closed down that I despaired telling you where to find the items. The site that Mary Mapes's book references as to where to find the best available copies of the documents was also closed down. I recommend Hailey's three items that I was able to download several years ago but cannot say where to find them now. He clearly shows the font was not Times New Roman and recounts the nasty, vicious attacks made on him for daring to discuss the issue in a scholarly and technical way. I offer this quote from the very first page of the above cited text to give a hint of what the man endured:

"I would especially like to express my appreciation to the administrators of Utah State University who protected my right in this effort when the research and I were attacked by bloggers who opposed it. From the President of USU to the Head of the English Department, they all closed ranks around me, protecting me from what could have been the end of my career. I will not soon forget that support."

Entering the gentleman's name in the search window of your Internet browser will bring up more instances of graceless discussions about him than you might wish to read.

On Internet Archive you will find my text, *Reliability Testing of Expert Handwriting Opinions*, and some 30 other forensic publications of mine. I believe the various methods presented for conducting a reliability test are either directly applicable to other fields or have parallel methods in other fields. The text urges a cross-examiner to use a different approach in questioning than the opposing expert witness used in the examination and forming his opinion, otherwise the cross-examiner plays on the witness's home court and by the witness's rules. Likewise, a gravely mistaken method, that particularly government document examiners apparently were trained to use, is to follow the exact same theory and procedure a colleague did in developing a reported opinion that one is to review. It is almost an iron-clad guarantee that, if the original examiner made a mistake, the tester will most likely make the exact same mistake by doing the exact same things. Only a different but valid approach could avoid the same pitfalls, whether potential or actually fallen into, that the first examiner faced but did not recognize. There have been cases that make one suspect that the tester assumed the impeccable perfection of the first examiner, who was also the tester for the second examiner's work product. This procedure is an engraved invitation for either witful or witless mutual verification at all times.

*Oxford English Dictionary* (OED) is considered the finest and most comprehensive dictionary for any language humans have spoken. Comprising 12 basic volumes with several volumes of supplements, it can be had in the digital edition, version 4.0, for a fraction of the cost of a printed text. If you enjoy words, their parentage and evolution over the centuries, indeed millennia, you will obtain hours of delight by purchasing it. As a professional for whom words are the most basic tools, you can bring new dimensions of class to your reports and testimony, and also avoid a misuse of words that could embarrass you.

Since our informal stroll has brought us to OED, we might as well detour down a side alley to one of its kinfolk, the thesaurus, which is a guide to one word's relatives in meaning. *Roget's International Thesaurus, Seventh Edition*, will do what other synonym books seem incapable of doing, provide at least a hint to the idiomatic and psychological similarities and differences between words of similar meaning. It gathers words together in their families of meaning, including shirttail relatives. It also invites you to explore other groups of words that might provide the exact shade of meaning you seek, while warning you about such things as colloquial terms that might not fit the tone of your text. The editor is Barbara Ann Kipfer, Ph.D., to whom I shall be ever grateful. You can access a digital version at <http://www.thesaurus.com/Roget-Alpha-Index.html>. My preference is still for the printed edition for reasons I shall not burden you with.

### **Final word:**

Thank you for giving your time and attention to my paper. As hinted at so often, your views, if expressed with courtesy and culture, are invited, particularly if a fruitful discourse might be brought to birth. May God bless you and yours with good health and peace of heart.

Respectfully,

Marcel B. Matley

02 February 1972

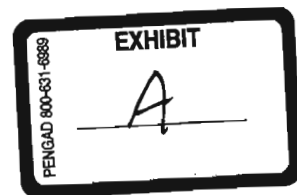
SUBJECT: Flight Qualifications

Harris,

Update me as soon as possible on flight certifications. Specifically - Bath and Bush.

JERRY B. KILLIAN

*J. B. Killian*



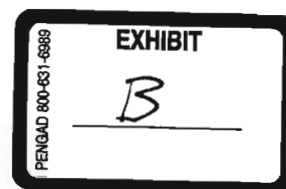
B. KILLIAN

SUBJECT: F

February 1972

flight certificate

ath and Bush.





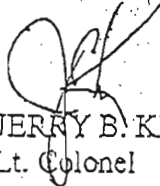
111th Fighter Interceptor Squadron  
P. O. Box 34567  
Houston, Texas 77034

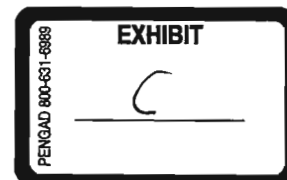
01 August 1972

MEMORANDUM FOR RECORD

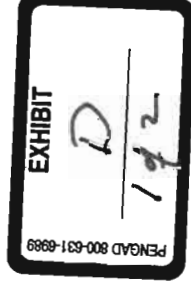
SUBJECT: Bush, George W. 1st Lt. 3244754FG  
Suspension of Flight status

1. On this date I ordered that 1st Lt. Bush be suspended from flight status due to failure to perform to USAF/TexANG standards and failure to meet annual physical examination (flight) as ordered.
2. I conveyed my verbal orders to commander, 147th Ftr Intcpg Gp with request for orders for suspension and convening of a flight review board IAW AFM 35-13.
3. I recommended transfer of this officer to the 9921st Air Reserve Squadron in May and forwarded his AF Form 1288 to 147th Ftr Intcpg Gp headquarters. The transfer was not allowed. Officer has made no attempt to meet his training certification or flight physical. Officer expresses desire to transfer out of state including assignment to non-flying billets.
4. On recommendation of Harris, I also suggested that we fill this critical billet with a more seasoned pilot from the list of qualified Vietnam pilots that have rotated. Recommendations were received but not confirmed.

  
JERRY B. KILLIAN  
Lt. Colonel



2. I conveyed my verbal orders to command suspension and convening of a flight review.
3. I recommended transfer of this officer to forward his AF Form 1288 to 147th Ftr. Officer has made no attempt to meet his transfer desire to transfer out of state including assignment.
4. On recommendation of Harris, I also suggested seasoned pilot from the list of qualified View received but not confirmed.



2. I conveyed my verbal orders to command suspension and convening of a flight review.

3. I recommended transfer of this officer to forward his AF Form 1288 to 147 th Ftr. Officer has made no attempt to meet his transfer desire to transfer out of state including assignment.

4. On recommendation of Harris, I also suggested seasoned pilot from the list of qualified View received but not confirmed.

EXHIBIT

D

2 of 2

PENGAD 800-631-6989

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz  
1234567890\$

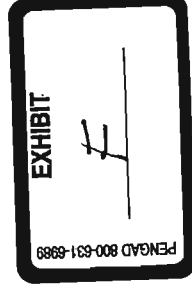
Times New Roman font, 14 pt., page 482, *The Type Specimen Book*....”  
V&M Typographical, Inc. VanNostrand Reinhold, 1974.



The basic character in a type design is determined by the uniform design characteristics of all letters in the alphabet. However, this alone does not determine

ABCDEFGHIJKLMNOPQRSTUVWXYZ  
abcdefghijklmnopqrstuvwxyz 1234567890  
ABCDEFGHIJKLMNOPQRSTUVWXYZ

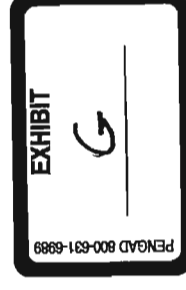
Times Roman font, 12 pt., page 482, *The Type Specimen Book...*  
V&M Typographical, Inc. VanNostrand Reinhold, 1974.



The basic character in a type design is determined by the uniform design characteristics of all letters in the alphabet. However, this alone

ABCDEFGHIJKLMNOPQRSTUVWXYZ&  
abcdefghijklmnopqrstuvwxyz 1234567890\$  
ABCDEFGHIJKLMNOPQRSTUVWXYZ

Palatino font, 12 pt., page 386, *The Type Specimen Book*....”  
V&M Typographical, Inc. VanNostrand Reinhold, 1974.



\$1234567890%

qwertyuiop†

asdfghjkl' =

zxcvbnm, . -

#\*9/\$†?1¢()@

QWERTYUIOP&

ASDFGHJKL'+

ZXCVBNM::



Heritage font for IBM Executive,  
page 246, *Haas Atlas*.

234567890-=

qwertyuiop1

asdfghjkl;'

zxcvbnm,./

@#\$%&\*()\_+

QWERTYUIOPI

ASDFGHJKL:."

ZXCVBNM,.?

Patron font for IBM Executive,  
page 246, *Haas Atlas*.





# Airmen Commissioning Program

AAG-Air

TAG

26 Aug 69

1. A review of ANGR 36-02 and AFM 36-5 has been made.
2. The policy letter, subject: Airmen Commissioning Program, has been reviewed.
3. The conclusion that direct commissioning of enlisted men is permitted under regulation noted in paragraph 1. It is further concluded that a good deal of care should be taken in a program of any such commissions.
4. It is recommended that a Board of three officers be created at each base. The Board to consist of one Colonel or Lieutenant Colonel, one Major or Captain and one Lieutenant and that a Board at State Headquarters consist of one Colonel, one Major and one Captain.
5. Duties of the Board would be to interview the officers desiring to recommend an enlisted man for commission. If this interview resulted in the decision that the Air National Guard's interest could best be served by direct commissioning rather than OCS attendance, then the candidate or candidates would be screened by this Board. If a recommendation of approval is made, the papers would be sent to the Adjutant General Headquarters and reviewed by Chief of Staff, Air, Assistant Adjutant General, Air and the Adjutant General sitting in conference.

ROSS AYERS

Major General, AGC, TMDRNG

The Adjutant General

PENGAD 800-831-6880

EXHIBIT

J

ABCDEFGHIJK

LMNOPQRSTU

VW.Y 1234567890

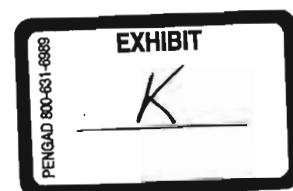
February

light Qualifications

update me as soon as

possible on flight ce

rtifications



# APPENDIX

1 I, Marcel B. Matley, swear and affirm:

2 1. Shawn Matloob, Attorney at Law, asked that I forward  
3 to him material related to the issue of President Bush's  
4 National Guard service as covered by CBS 60-Minutes,  
5 Wednesday Edition, specifically regarding my examination of  
6 the Colonel Killian documents. He requested a sampling of  
7 the evidence that, as I testified in court on Thursday,  
8 April 21, 2006, showed that my opinions in the matter had  
9 been correct. I am hereby complying with Mr. Matloob's  
10 request.

11 2. Attached hereto as **Exhibit A** of three pages are the  
12 summary notes of my original findings with later  
13 clarification given in square brackets, []. As I testified  
14 in court, if requested to I would make available other  
15 materials I generated regarding the Killian documents.

16 3. There were two main assertions made immediately  
17 after the broadcast in support of the thesis that the  
18 Colonel Killian documents were forgeries, and these  
19 assertions have been repeated even to this day. These  
20 assertions were false and unfounded when first made and have  
21 enjoyed no improvement since. I will limit myself to two  
22 major falsehoods as examples of the raft of falsehoods  
23 propagated by both partisans and uninformed individuals.

24 4. First, it was asserted that proportional spacing  
25 typewriters were not available by the early 1970s when the  
26 Killian documents were dated. Ordway Hilton was the most  
27 prolific and maybe the most authoritative author in American  
28 document examination in the mid and later Twentieth Century.

1 **Exhibit B** of two pages is a section from his major text  
2 where he describes the first proportional typewriters to be  
3 developed and marketed in the late 1940s and early 1950s.

4 5. Second, it was asserted that the type font on the  
5 Killian documents was Times New Roman. It most definitely  
6 was not. Even the poor quality copies first available  
7 publicly clearly showed design differences. **Exhibit C** of  
8 two pages shows on page one enlarged words from the Memo  
9 dated 02 February, 1972, to Harris from Killian. Page two  
10 of **Exhibit C** shows enlarged alphabets in Times New Roman.  
11 The easiest differences in design to note are these:

12 (a) There are dimples in the tops and bases of capital  
13 letters on page one, such as capital letter "B," while on  
14 page two all capital letters are without such dimples.

15 (b) Lower case "y" has no serif on its right arm on  
16 page one, but has a serif on its right arm on page two.

17 (c) Lower case "r" on page one has the top right  
18 extension of the letter in alignment with the left serif.  
19 While on page two from Times New Roman the top right  
20 extension branches from the staff of the letter.

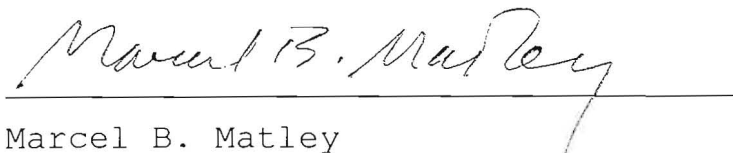
21 6. As I testified, later and better copies of the  
22 documents in question became available after the news media  
23 and public lost interest in the truth of the matter and  
24 blindly settled into a belief that the documents were  
25 forgeries because of features such as discussed above.  
26 These finer copies confirmed that the font of the Killian  
27 documents definitely was not Times New Roman and that the  
28 other assertions why the documents were forgeries are all

1 equally without merit. However, it would require a 100-page  
2 monograph to discuss and illustrate in detail why each false  
3 assertion individually is nonsense and why the whole group  
4 together is merely compounded nonsense.

5 7. To learn of the inside story and of the unreported  
6 aftermath of the event, I recommend Mary Mapes's book, *Truth*  
7 *and Duty*, published by St. Martin's Press in 2005.

8 8. As to the report of the Independent Panel, it is  
9 replete with materially false statements. I wrote a six-  
10 page memo to the Panel discussing the major material errors  
11 they made in regard to my interview with them. They felt no  
12 compunction about letting all materially false statements  
13 stand. I spoke to several others who had been interviewed  
14 by the Panel. Each one said that to some degree one's  
15 statements were also subject to materially false report by  
16 the Panel.

17 9. I, Marcel B. Matley, swear and affirm under penalty  
18 of perjury under the applicable laws of United States of  
19 America that the foregoing is true and correct to the best  
20 of my knowledge and belief. This affirmation was executed  
21 on this Twenty-first Day of April, 2006, at San Francisco,  
22 California.

23  
24   
25 \_\_\_\_\_  
26 Marcel B. Matley

MARCEL B. MATLEY  
DOCUMENT EXAMINATION  
PUBLICATIONS, SEMINARS

(3092 ARMY STREET)  
POST OFFICE BOX 882401  
SAN FRANCISCO, CA 94188  
E-MAIL: MMATLEY@AOL.COM

PHONE: (415) 753-2832  
FAX: (415) 753-3346  
TOLL FREE: 1-800-367-8403

**FAX TRANSMISSION**  
**FOR THE NAMED RECIPIENT ONLY**  
**OR DULY AUTHORIZED AGENT**

DATE. September 10, 2004

TO. Yvonne Miller

AT. 212-975-1998

FROM. Marcel B. Matley

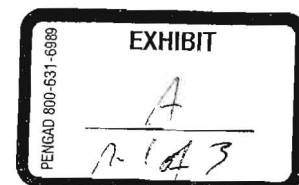
RE. Killian Signatures

PER. Your request

TOTAL PAGES. Cover page plus two (2) page.

NOTE: The information contained herein is intended for the individual or entity named above and may contain privileged or confidential data. If you should receive this fax in error, you are hereby notified that any dissemination, distribution, or copy of this communication may be strictly prohibited and may violate another's legal rights. If you are not the named recipient or the recipient's authorized agent, please notify the sender immediately by calling the toll free number in the letterhead, protect the information from further dissemination, and return the original message to the above postal address. Your kindness in this regard is appreciated.

The message begins on the next page.





Dear Yvonne:

Here is an exact reproduction of the handwritten notes I showed the staff at 60 Minutes Wednesday. Square brackets, [], indicate added clarifications.

1. Poor copies:

→ could not authenticate documents themselves

Therefore, assume reliable copies of authentic documents.

2. Re signatures: Limited amount documents.

Therefore, define questions: What is preponderance of available and reliable handwriting evidence?

Therefore, did one or more persons write the seven signatures?

3. One "signature" is initials, so technically cannot address.

4. 4 signatures: All reliable indicators are one writer. No contrary indicators.

5. "New" signature. [Meaning one shown when I first got to your office.] Only capital "J" differs.

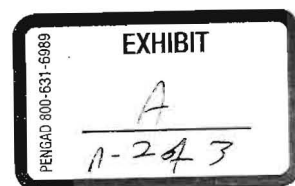
Not significant feature. Therefore, preponderance of available handwriting evidence is one writer of 5 signatures.

6. 06/24/03 letter:

→ Conspicuous differences.

→ Inconspicuous similarities.

Therefore, need reasonable explanation to identify.



7. Hypothesis: Stress: undue influence, pressure or some such.

→ If so - reasonably explains differences.

→ Content of documents supports hypothesis. [Re situation of pressure to accommodate individual failing to fulfill military obligations.]

8. Presumption of inference: Party who could produce or make available best evidence and does not, realizes it would be against [such party].

END OF NOTES WRITTEN AT 60 MINUTES OFFICES.

Subsequent to writing out the above notes, I was shown several more documents. The signatures on them were consistent with observations and conclusions made previously.

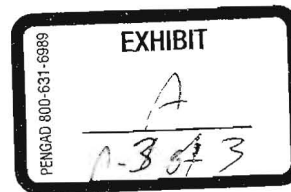


One signature fit the hypothesis of stress as did that on 06/24/03 letter, since it had conspicuous differences and inconspicuous similarities. Contents of the documents supported hypothesis of stress at the same period of time. Further, the two signatures fitting hypothesis of stress were on documents addressing the pressure to accommodate. All the other signatures, excluding the initials which were not addressed, were on documents addressing routine matters.

We discussed issue that we deal in probabilities. That was covered in item 2 above: "What is preponderance of available and reliable handwriting evidence?" And also in last item 8 regarding any party withholding evidence or not making it available, where we recognize full revelation of all pertinent evidence could alter our opinion. If one who has key to more evidence attacks our opinion but does not offer the key, it can reasonably be presumed that the attacker knows the withheld evidence is against the attacker.

---

Marcel B. Matley



*vier Series in Forensic and Police Science*

ARRY A. J. FISHER, Editor



*Techniques of Crime Scene Investigation, Third Edition*  
e Svensson, Otto Wendel, and Barry A. J. Fisher

*Scientific Examination of Questioned Documents, Revised Edition*  
lway Hilton



# Scientific Examination of Questioned Documents

Revised Edition

**ORDWAY HILTON**

Examiner of Questioned Documents  
Landrum, South Carolina



**Elsevier**

New York • Amsterdam • London

(c) 1982

The manual machine, which was the original development in the typewriter, consists of a series of mechanical linkages from the type key to the actual typebar, which throws a typeface against the ribbon and paper. The modern machine contains two typefaces on each typebar, a capital and a lowercase letter or a numeral and another character, as indicated on the keyboard. Thus, there is some relationship in certain types of defects between the two characters on a single typebar. The change from capital to lowercase letter is accomplished by the action of a shift key, which either moves the basket or segment of type up and down or moves the carriage unit up and down to position the upper or lower section of the typeblock for printing.

The electric typewriter using the typebar action operates in much the same way except that the actual typebar movement is activated by means of an electrically driven power roller or other motor-driven device rather than directly by the stroke of the key and the force imparted by the typist. Electric machine work may be somewhat more uniform than manual typewriting unless in poor repair, but with a highly experienced typist using a manual machine, it may be difficult to distinguish the work of the manual machine from that of an electric typewriter.

The portable typewriter is another subclass of the typebar machine. The engineering of these machines is different from that of the standard office models, but, except that the construction is lighter, since machine weight should be low, the action is similar. Both manual and electric portables have been developed. In many instances, especially with the low-price models, which are not as well built as the more expensive models and may not contain several of the operating features of the more expensive models, work of the portable typewriter may be much more erratic. Variation especially depends in large measure on how sturdy and refined the manufacturing features of the machine are. Low-cost portable typewriters are engineered without some features that assure more uniformly productive work, and the machine cannot give the frame strength that is found in the heavier portable models of office machine. Consequently, alignment variations from one type of a character to another may be much greater. Other defects also may be more extensive.

In recent years, several companies have developed an intermediate model electric typewriter. These compact machines are not intended to be portable, but are designed for office and home use where the volume of typewriting is moderate. In size and weight they fall between the large of deluxe portables and the standard office machine. Here again, while they are well engineered, they will deteriorate somewhat more rapidly than the top-line, well-built office machines, especially

after extensive use. However, examiners would be hard pressed in many instances to recognize the work of these machines as opposed to standard electric office models.

With all typebar machines, one can expect to find slight alignment defects and some other defects early in the history of the machines.

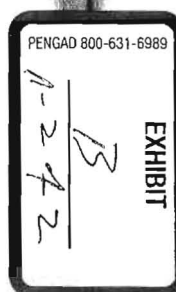
### Proportional Spacing Typewriting

In the 1940s and early 1950s, IBM developed and successfully marketed the first proportional spacing typewriter, which was known as the Executive. The distinctive characteristic of this machine is that each letter on the machine no longer occupies the same horizontal space, which had been typical of all typewriters previously developed. Instead, letters are built on a basic escapement unit of  $\frac{1}{32}$  or  $\frac{1}{36}$  in. depending upon the font. Individual letters occupy 2, 3, 4, or 5 units, that is, letters are not necessarily the same in width. Thus, the type fonts resemble printing. Depending on the particular font, letters such as i, e, f, j, and t would usually occupy two units of space, a great bulk of the lowercase letters such as a, o, e, n, h, and k occupy three units and w and m occupy four or five units. Capital letters for the most part are wider than their corresponding lowercase letters. However, no letter occupies more than five units and none less than two.<sup>4</sup> The machine uses a typebar action.

During the 1950s, other companies manufactured competitive machines in this country. Remington Rand followed IBM in proportional spacing typewriting using both the  $\frac{1}{32}$  and  $\frac{1}{36}$  in. escapement. Underwood introduced a differential spacing machine, a different concept, which used a basic escapement of  $\frac{1}{10}$  in. with provision for narrow letters to occupy only  $\frac{1}{2}$  unit and wide letters  $1\frac{1}{2}$  units. All these machines were electric typewriters.

For a short period of time, the Italian firm Olivetti produced a manual proportional spacing machine with highly distinctive type design, but in more recent years this has been superseded by their electric proportional spacing machine using the standard  $\frac{1}{32}$  and  $\frac{1}{36}$  in. escapement.

Two other European companies, Olympia and Hermes, entered the proportional spacing field in more recent years, but the latter ended production in 1974. While proportional spacing typewriting was extremely popular, especially for executive correspondence in the Amer-



<sup>4</sup>O. Hilton, "Problems in the Identification of Proportional Spacing Typewriting," *Journal of Forensic Sciences* 3 (1958): 263-287.

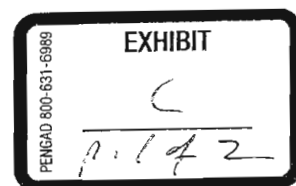
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